

# HD74LS242

## Quadruple Bus Transceivers (with three-state outputs)

REJ03D0461-0300  
Rev.3.00  
Jul.15.2005

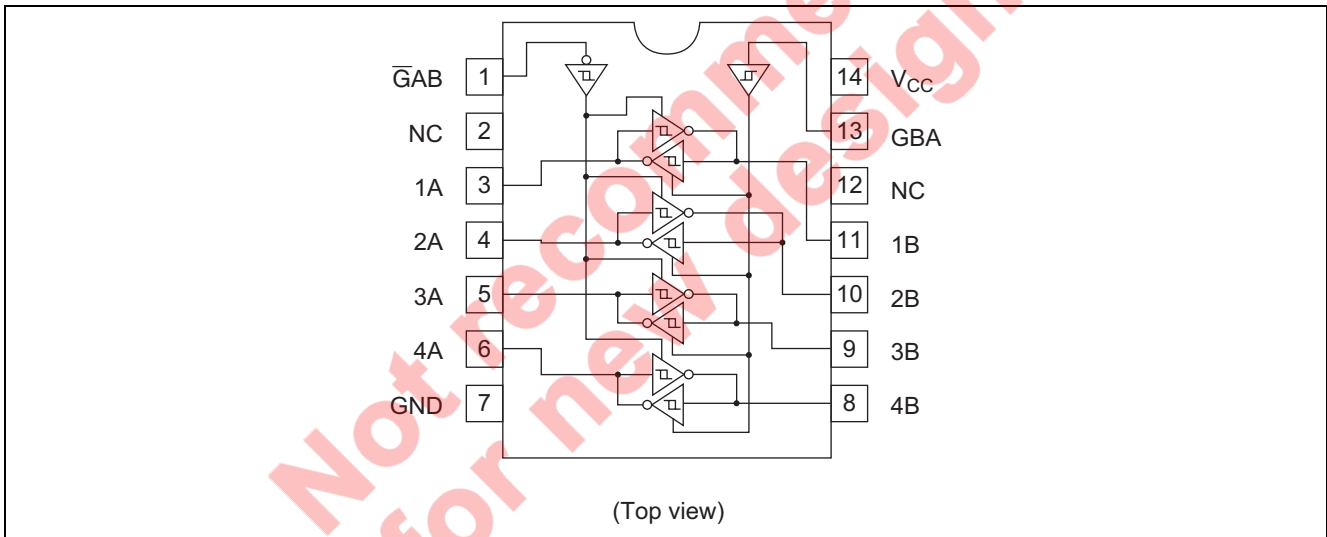
### Features

- Ordering Information

Part Name	Package Type	Package Code (Previous Code)	Package Abbreviation	Taping Abbreviation (Quantity)
HD74LS242P	DILP-14 pin	PRDP0014AB-B (DP-14AV)	P	—
HD74LS242FPEL	SOP-14 pin (JEITA)	PRSP0014DF-B (FP-14DAV)	FP	EL (2,000 pcs/reel)

Note: Please consult the sales office for the above package availability.

### Pin Arrangement



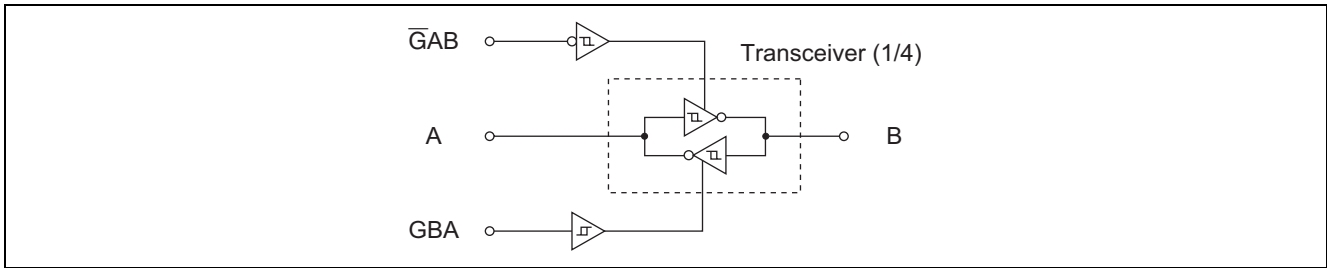
### Function Table

Control input		Data port status	
$\overline{\text{GAB}}$	GBA	A	B
H	H	Inverting output	Input
L	H	*	
H	L	Isolated	Isolated
L	L	Input	Inverting output

Notes: 1. H; high level, L; low level

2. \*; Possibly destructive oscillation may occur if the transceivers are enabled in both directions at once.

## Block Diagram



## Absolute Maximum Ratings

Item	Symbol	Ratings	Unit
Supply voltage	$V_{CC}$	7	V
Input voltage	$\overline{GAB}$ , GBA	$V_{IN}$	7
	A, B	$V_{IN}$	5.5
Power dissipation	$P_T$	400	mW
Storage temperature	$T_{stg}$	-65 to +150	°C

Note: Voltage value, unless otherwise noted, are with respect to network ground terminal.

## Recommended Operating Conditions

Item	Symbol	Min	Typ	Max	Unit
Supply voltage	$V_{CC}$	4.75	5.00	5.25	V
Output current	$I_{OH}$	—	—	-15	mA
	$I_{OL}$	—	—	24	mA
Operating temperature	$T_{opr}$	-20	25	75	°C

Not recommended for new design

## Electrical Characteristics

(Ta = -20 to +75 °C)

Item	Symbol	min.	typ.*	max.	Unit	Condition	
Input voltage	V <sub>IH</sub>	2.0	—	—	V		
	V <sub>IL</sub>	—	—	0.8	V		
Hysteresis	V <sub>T</sub> <sup>+</sup> - V <sub>T</sub> <sup>-</sup>	0.2	0.4	—	V	V <sub>CC</sub> = 4.75 V	
Output voltage	V <sub>OH</sub>	2.4	—	—	V	V <sub>CC</sub> = 4.75 V, V <sub>IH</sub> = 2 V	
		2	—	—			
	V <sub>OL</sub>	—	—	0.4	V	V <sub>CC</sub> = 4.75 V, V <sub>IH</sub> = 2 V, V <sub>IL</sub> = 0.8 V	
		—	—	0.5			
Off-state output current	I <sub>OZH</sub>	—	—	40	μA	V <sub>O</sub> = 2.7 V V <sub>CC</sub> = 5.25 V, V <sub>IH</sub> = 2 V, V <sub>IL</sub> = 0.8 V	
	I <sub>OZL</sub>	—	—	-200			
Input current	I <sub>IH</sub>	—	—	20	μA	V <sub>CC</sub> = 5.25 V, V <sub>I</sub> = 2.7 V	
	A Input	I <sub>IL</sub>	—	—	mA	V <sub>CC</sub> = 5.25 V, V <sub>I</sub> = 0.4 V, GAB or GBA at GND	
	B Input		—	—			V <sub>CC</sub> = 5.25 V, V <sub>I</sub> = 0.4 V, GAB or GBA at 4.5 V
	GAB or GBA		—	—			
	A or B	I <sub>I</sub>	—	—	mA	V <sub>CC</sub> = 5.25 V, V <sub>I</sub> = 5.5 V	
	GAB or GBA		—	—		V <sub>CC</sub> = 5.25 V, V <sub>I</sub> = 7 V	
Short-circuit output current	I <sub>OS</sub>	-40	—	-225	mA	V <sub>CC</sub> = 5.25 V	
Supply current**	I <sub>CCH</sub>	—	22	38	mA	V <sub>CC</sub> = 5.25 V	
	I <sub>CCL</sub>	—	29	50			
	I <sub>CCZ</sub>	—	29	50			
Input clamp voltage	V <sub>IK</sub>	—	—	-1.5	V	V <sub>CC</sub> = 4.75 V, I <sub>IN</sub> = -18 mA	

Notes: \* V<sub>CC</sub> = 5 V, Ta = 25°C\*\* With all outputs open, I<sub>CC</sub> is measured with transceivers enabled in one direction only, or with all transceivers disabled.

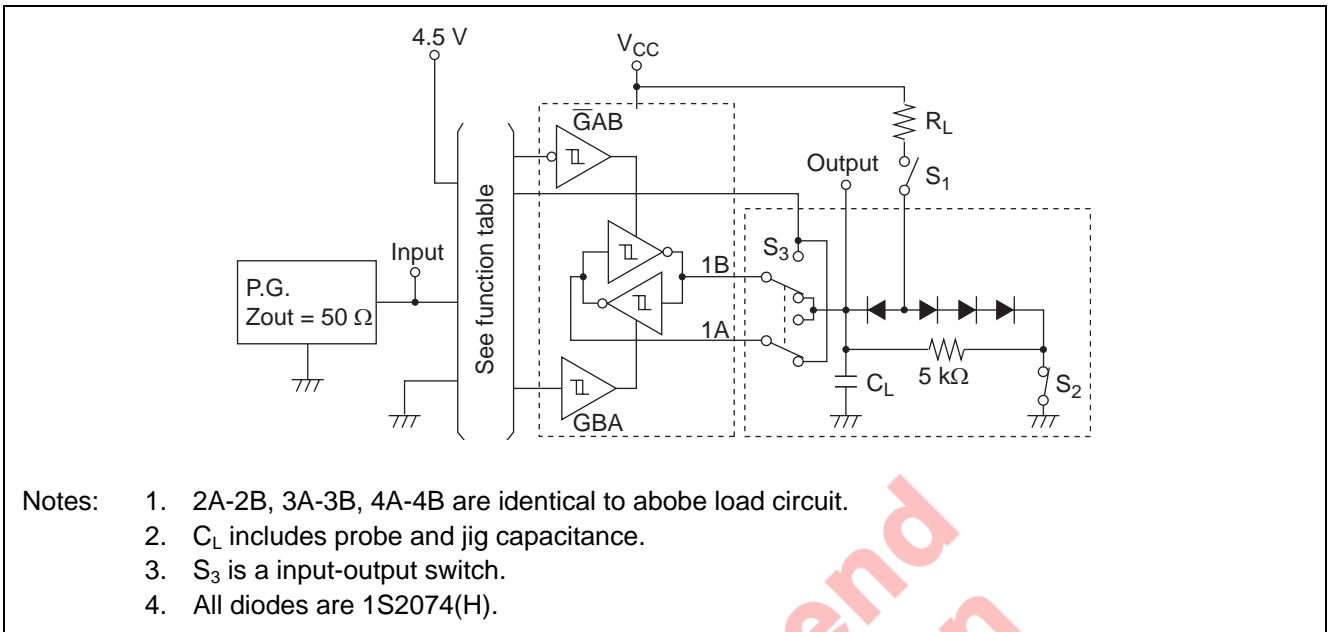
## Switching Characteristics

(V<sub>CC</sub> = 5 V, Ta = 25°C)

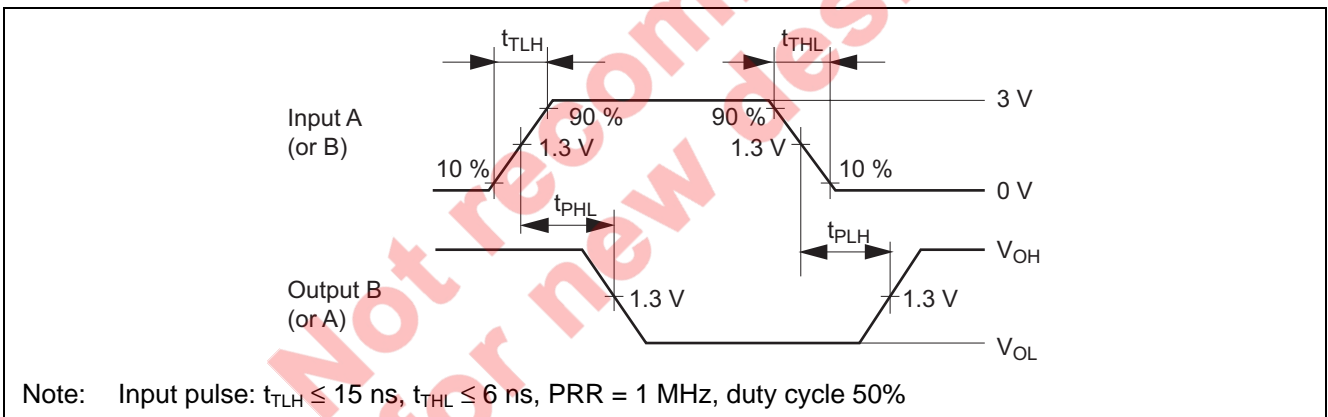
Item	Symbol	min.	typ.	max.	Unit	Condition
Propagation delay time	t <sub>PLH</sub>	—	9	14	ns	C <sub>L</sub> = 45 pF, R <sub>L</sub> = 667 Ω
	t <sub>PHL</sub>	—	12	18		
Output enable time	t <sub>ZL</sub>	—	20	30		
	t <sub>ZH</sub>	—	15	23		
Output disable time	t <sub>LZ</sub>	—	15	25		C <sub>L</sub> = 5 pF, R <sub>L</sub> = 667 Ω
	t <sub>HZ</sub>	—	10	18		

## Testing Method

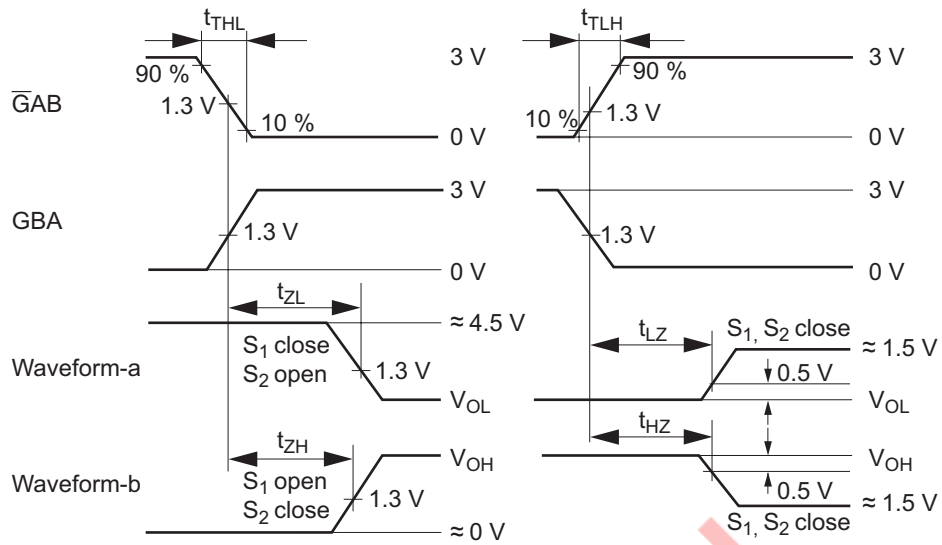
### Test Circuit



### Waveforms 1



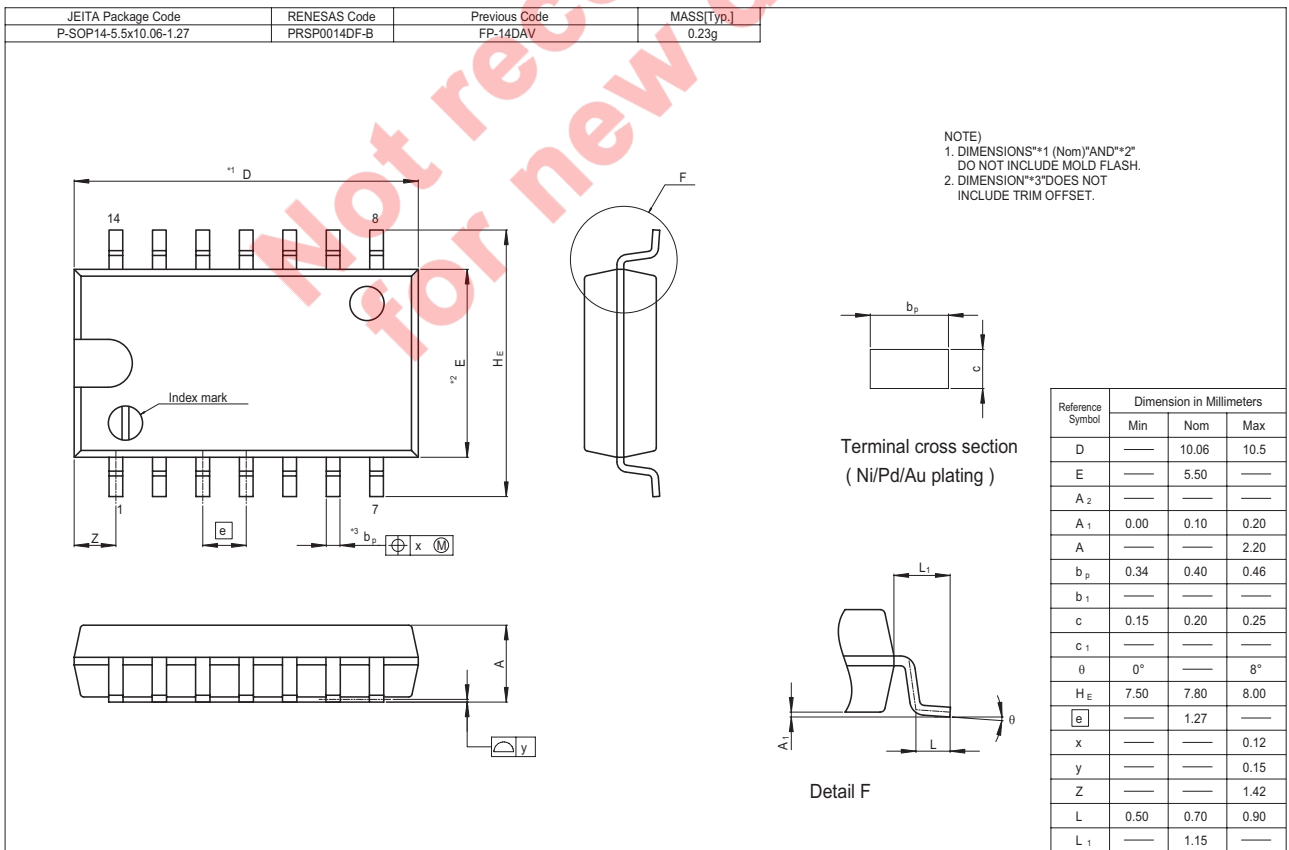
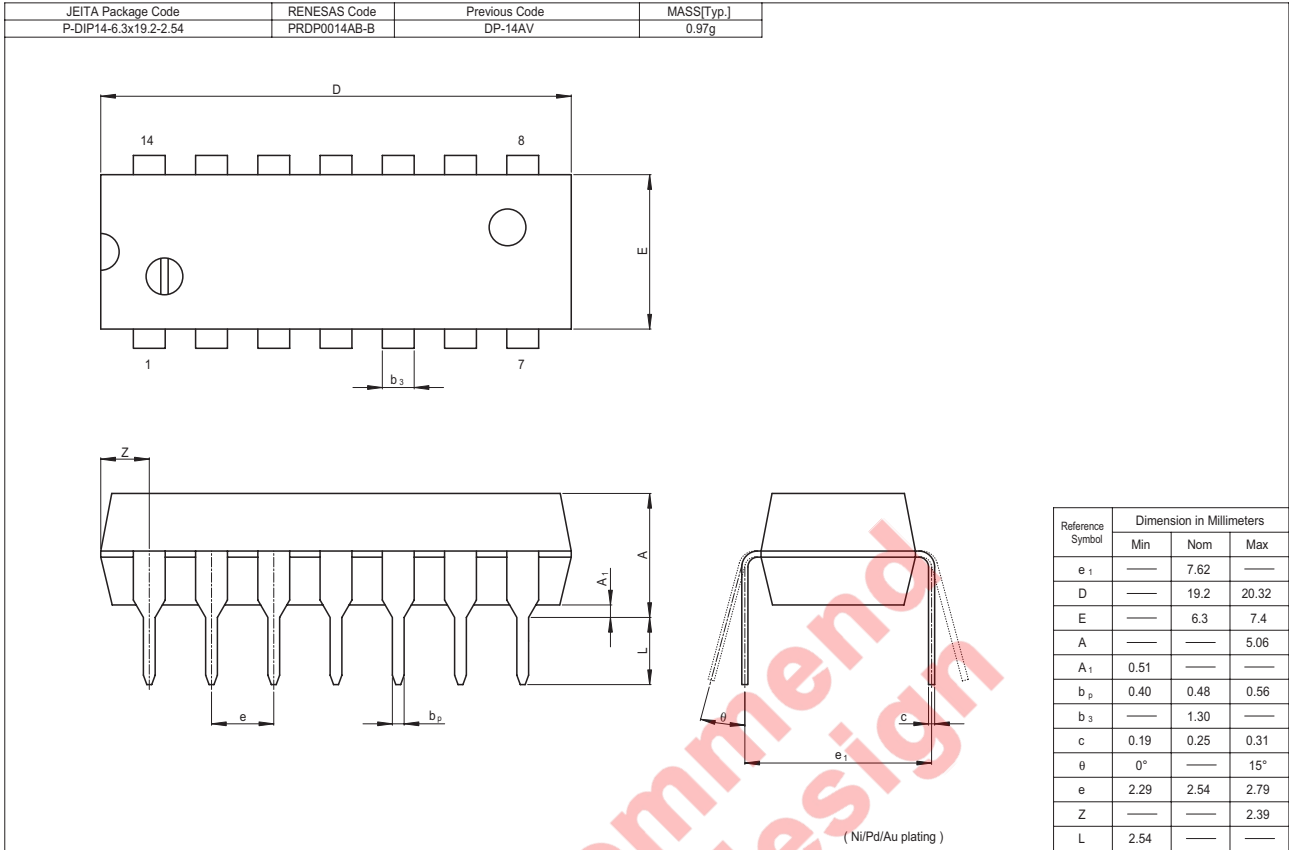
Waveforms 2



- Notes:
1. Input pulse:  $t_{\text{TLH}} \leq 15 \text{ ns}$ ,  $t_{\text{THL}} \leq 6 \text{ ns}$ , PRR = 1 MHz, duty cycle 50%
  2. Waveform a is an output by internal conditions like "L" except for the case where an output is disabled by output control.
  3. Waveform b is an output by internal conditions like "H" except for the case where an output is disabled by output control.

Not recommended for new design

Package Dimensions



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